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HENDRICKS,  
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PERSUASIVE COMMUNICATION & CHILDREN'S  
WILDERNESS EDUCATION PROGRAM  
EFFECTIVENESS

by Dr. Bill Hendricks

FINAL REPORT FOR RESEARCH AGREEMENT

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"Persuasive Communication and Children's  
Wilderness Education Program Effectiveness"

CALIFORNIA POLYTECHNIC STATE UNIVERSITY

FS Contact: Dr. Alan Watson

CoOp Contact: Dr. Bill Hendricks

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Persuasive Communication and Children's Wilderness  
Education Program Effectiveness

William W. Hendricks  
Recreation Administration Program  
Natural Resources Management Department  
California Polytechnic State University  
San Luis Obispo, CA 93407  
(805) 756-1246

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## Abstract

Appropriate wilderness behavior is an essential element of wilderness management strategies. Two studies were conducted to investigate the Impact Monster skit, a wilderness education program designed to influence wilderness behavior. A quasi-experimental design (pretest/posttest) study examined the effects of conceptual routes of persuasion and student grade level on low impact camping behavioral intentions of children. A survey research study evaluated the perceived effectiveness of the program by wilderness educators. In the first study, there was a significant difference in the behavioral intentions of children following exposure to the program. A wilderness hiker was more effective than a wilderness ranger in influencing behavioral intentions and there was a significant difference in the behavioral intentions between third and first and sixth and first grade students. All grade levels were more responsive to a telling message format. Eighty percent of the wilderness educators rated the program good to excellent as an effective wilderness education tool. They considered grades fourth, fifth, third, and sixth respectively to be the most appropriate audiences for the program. Effective program elements, problems, and suggestions for improvement were also analyzed. The results of both studies provide evidence that the program influences short-term behavioral intentions and remains an effective tool for wilderness educators to promote appropriate wilderness behavior.

Persuasive Communication and Children's Wilderness  
Education Program Effectiveness

During the past decade wilderness managers have increasingly been using school programs as a wilderness education technique. These programs may be effective in managing the behavior (Doucette & Cole, 1993) of current and future wilderness area users. Children are an important target of persuasive communication messages (Roggenbuck & Manfredi, 1989), yet until recently, have received little attention in wilderness education research.

An increased focus on wilderness education is currently taking place within federal land management agencies. The Arthur Carhart National Wilderness Training Center has distributed nationally a K-8 curriculum, designed, in part, to teach land ethics and appropriate wilderness behavior. One activity within the curriculum is the Impact Monster.

The Impact Monster, a wilderness education program designed to teach minimum impact techniques (Hansen, 1990) has been used by U.S. Forest Service wilderness rangers for many years (Ham, 1992). The program is an excellent example of an activity intended to influence wilderness user behavior. Although individual wilderness educators have conducted personal evaluations of the Impact Monster program, a systematic, comprehensive formal program evaluation has apparently not been conducted. A noted exception to this lack of research is a master's thesis recently completed that examined changes in wilderness behavior of fifth grade students who were exposed to a version of the Impact Monster skit (see Tracy, 1995). Among the concerns of wilderness educators regarding the program are appropriate recipient age levels, appropriate sources of the "good guy" and impact monster, and improvements that can be made in the content of the program to influence wilderness visitor behavior.

### Purpose Statement

Based on the concerns of wilderness educators who use the Impact Monster program as an educational tool, the purpose of this study was to examine the effects of conceptual routes of persuasion and student grade level on low impact camping behavioral intentions of children. A secondary purpose of the research was to conduct an evaluation of individuals who had knowledge of the Impact Monster skit to assess their perceived effectiveness of the program and its content. In order to address these purpose statements a quasi-experimental design study and a survey research study were conducted.

### Research Questions

#### *Quasi-Experimental Design Study*

1. Does the source of the Impact Monster skit "positive message" influence behavioral intentions to adopt appropriate wilderness behavior?
2. Does the source of the Impact Monster skit "negative message" influence behavioral intentions to adopt appropriate wilderness behavior?
3. Does message argument format (telling v. asking) influence behavioral intentions to adopt appropriate wilderness behavior?
4. Does grade level (first, third, and sixth) influence behavioral intentions to adopt appropriate wilderness behavior?

#### *Survey Research Study*

5. Do wilderness educators think that the Impact Monster skit is an effective wilderness education program?
6. What elements of the Impact Monster skit are considered effective by wilderness educators?
7. What groups do wilderness educators consider to be the most appropriate targets for the Impact Monster program?

8. What are problem areas with the Impact Monster program and how can the program be improved?
9. What measurable, behavioral objectives should be developed for the program?

## Literature Review

### *Persuasive Communication*

A common approach to wilderness visitor management has been the use of conceptual routes of persuasion to influence visitor behavior (Roggenbuck, 1992; Roggenbuck & Manfredi, 1989). Three approaches are generally employed by wilderness managers: applied behavioral analysis, central route to persuasion, and peripheral route to persuasion (Roggenbuck & Manfredi, 1989).

Applied behavioral analysis is based on overt behavior that is rewarded or punished (Roggenbuck, 1992; Roggenbuck & Manfredi, 1989). Throughout the 1970s and to a lesser extent in the 1980s applied behavioral analysis has been utilized as intervention strategies in environmental behavior research (Dwyer, Leeming, Cobern, Porter, & Jackson, 1993). These strategies may be classified as antecedent or consequence conditions (Dwyer et al., 1993) and are potential immediate solutions to recreation management problems that may not change behavior in the long-term (Roggenbuck, 1992).

The other two wilderness and recreation management conceptual routes of persuasion, the central route to persuasion and the peripheral route to persuasion (Roggenbuck, 1992; Roggenbuck & Manfredi, 1989), were derived from the Elaboration Likelihood Model (Petty & Cacioppo, 1981, 1986). The central route to persuasion requires that recipients of a message be both motivated and able to process the information presented (Petty & Cacioppo, 1981, 1986; Petty, McMichael, & Brannon, 1992). With the peripheral approach, little attention is paid to the

content of the message and therefore, expertise or attractiveness of a message source becomes important (Roggenbuck & Manfredo, 1989). Thus, the peripheral approach may be useful in wilderness education programs when a message is presented by a source that is viewed favorably by program participants. Although the central route to persuasion is generally not recommended as an effective approach with children due to its information processing requirements (Roggenbuck & Manfredo, 1989) wilderness researchers have not empirically examined age levels that may effect the processing of wilderness education program messages. Furthermore, leisure research has "examined many source, message, recipient and contextual variables, but... has paid little attention to the process by which these variables work" (Petty et al., 1992, p. 92). A noted exception to the lack of process studies is Manfredo and Bright's (1991) recreation communication model which supported persuasion processes.

Persuasion processes are also related to the content of a message. Message argument format influences the amount of individual processing that occurs. In general, questions result in more central route processing than assertions (Petty et al., 1992). For example, *asking* an individual why dishes should not be washed in a stream may be more effective in long-term behavior change than *telling* the person that they should not wash dishes in a stream.

The ability to process information is related to an individual's intelligence and cognitive ability (Ajzen, 1992). When processing abilities are not present persuasion is more likely to take place through a peripheral route (Petty et al., 1992). This aspect of the Elaboration Likelihood Model would suggest that children exposed to a wilderness education program, as learning and cognitive development takes place, would increasingly be able to process messages through a central route to persuasion.

### *Learning Development*

Recreation programmers have traditionally used life stages and learning development theories to formulate program objectives and to establish activity preferences. It has been well documented in leisure research that participation in activities at an early age influences activities selected as one grows older (Iso-Ahola, 1980; Kelly, 1974).

The Impact Monster program may be more effective at one grade level than another depending on learning and cognitive development of program participants. For example, Piaget's theory of cognitive development is based on continuous growth, yet he suggests distinct stages of development. These stages roughly approximate age groupings (Thomas, 1996). In the "Preoperational" stage (ages 2-7) as children approach the upper ends of this stage they begin to think logically (Howe, 1993), but still depend greatly on perception (how things are seen) (Howe, 1993; Maier, 1969; Thomas, 1996). The next stage, "Concrete-Operations" (ages 7-11) is characterized by the ability to solve problems, draw conclusions (Labinowicz, 1980), and to recognize relationships from hypothesis statements (Thomas, 1996). As children begin adolescence they enter the "Formal Operations" stage (ages 11-15). They are now able to engage in deductive reasoning and hypothesis development (Thomas, 1996).

Persuasive communication is an integral part of the Impact Monster program and provides a foundation for theoretical and managerial implications derived from this wilderness education program. Manfredo and Bright (1991) have suggested that future persuasion research should focus on specific topics that may be relevant to recreation managers. In addition, the Elaboration Likelihood Model has generated numerous studies in various disciplines, yet little attention has been given to the simultaneous process of central and peripheral routes (Perloff, 1993).

Research regarding the Impact Monster program has the potential to add to the understanding of wilderness education and persuasive communication.

### *Behavioral Intentions*

Behavior in wilderness and recreation settings has been an interest of researchers for more than two decades. Much of this interest has been derived from the Recreation Opportunity Spectrum (Driver & Brown, 1978) and is related to desired attributes in a wildland setting (Beaulieu & Schreyer, 1985). A behavioral intention is the most direct determinant of predicting behavior and is a key construct in the persuasive communication "Theory of Reasoned Action" which predicts behavior from attitudes, beliefs, and behavioral intentions (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). Although behavioral intentions or attribute choices have been investigated in a variety of environments (e.g. Beaulieu & Schreyer, 1985; McDonough, 1982; McLaughlin, Krumpe, & Paradice, 1982; Schreyer & Beaulieu, 1986) the selection of low impact behavioral intentions in a controlled setting has received little attention. Dowell and McCool (1985) found that exposure to a minimum impact program improved knowledge, behavioral intentions, and skills of Boy Scouts. However, there is little known about the behavior that younger children might select based on the influence of a wilderness education program. This project provides the opportunity to investigate the effectiveness of a wilderness education program, the influence of persuasive communication on children, and the appropriate grade level of an audience for the Impact Monster program.

### Methods

This research involved two studies. The first study was a quasi-experimental research design that was conducted at elementary schools to determine the effects of persuasive communication on behavioral intentions of students who were

presented the program. The second study involved a survey of individuals who are familiar with the program to ascertain their perceptions of the program's effectiveness.

### *Quasi-Experimental Design Study*

The quasi-experimental design was a factorial repeated measures analysis of variance. In this experiment, the factors were (a) three grade levels (first, third, and sixth) to indicate the ability to process information; (b) two levels of a message source who presented appropriate minimum impact techniques (wilderness ranger and wilderness hiker); (c) a message source with two levels who presented inappropriate techniques (typical impact monster with bright colors and an impact monster who is dressed in neutral colors as a "normal" wilderness user); and (d) two versions of the program's message argument (one in the traditional good guy/bad guy format with an emphasis on asserting behaviors and one in a combination dream sequence/good guy/bad guy format where questioning is the predominant form of discussion). The dependent variable was low impact camping behavioral intentions. Behavioral intentions were measured prior to and following presentation of the Impact Monster skit by having each subject view a wilderness setting illustration that had 6 appropriate and 11 inappropriate camping behaviors represented. The illustration was adapted, with artist permission, from a 1994 National Geographic, Wilderness System publication.

Subjects. Subjects for the study consisted of 574 students in first, third, and sixth grade classes from elementary schools located in communities on the Central California Coast adjacent to the Los Padres National Forest. There were 200 (34.8%) first graders, 202 (35.2%) third graders, and 172 (30.0%) sixth graders who participated in the study. Classes in each grade level were randomly assigned to one of eight treatments.

Procedure. Versions of the Impact Monster skit were standardized for a combination dream sequence/good guy/bad guy version and a good guy/bad guy version. The script for the former was written in an "asking" message argument, whereas the good guy/bad guy skit script was a "telling" format. The same props and low impact examples were used for each skit.

Trained research assistants presented the Impact Monster wilderness education program to elementary school students in the vicinity of the Los Padres National Forest. The research assistants maintained the same roles for each skit. For example, the wilderness hiker/ranger was always the same actor, simply dressed in uniform for one role and in traditional hiker clothing for the other role. The program was presented to each class individually during the spring, 1996. A pilot study was conducted with one class from each grade level. Based on results of the pilot study, numbers were placed next to each appropriate and inappropriate behavior on the illustration in order make it clear to students the choices that they could make.

Prior to and following the presentation of the program, each student was given an 8 1/2" x 11" color illustration that depicts appropriate and inappropriate low impact camping behaviors. Students were asked to circle those activities they would do the next time they went camping in a wilderness setting. Each student was assigned a pre-coded number for use in administration of the pre-test/post-test and for random selection of students to play roles in the skit. Inappropriate behaviors were coded -1 and appropriate behaviors were coded +1. Aggregate pre-test and post-test scores for the 17 potential behaviors present in the illustration were computed for each subject. Thus, scores could range from -11 for a student who selected the 11 inappropriate behaviors and no appropriate behaviors to +6 for a student who selected the 6 appropriate behaviors and no inappropriate behaviors.

### *Survey Research Study*

A second study of the project was an evaluation survey of Forest Service and other personnel who have employed the Impact Monster program as a wilderness education tool to determine their perceptions of the effectiveness of the program. The survey was pilot tested with personnel from the Arthur Carhart National Wilderness Training Center and the Wilderness Education Project. Based on this feedback a "don't know" category was added to the Likert type scale items on the instrument.

Information obtained from the survey included:

- (a) Program versions and modifications
- (b) Number of times the program was presented
- (c) Effectiveness of program components
- (d) Perceptions of appropriate ages for the program
- (e) Participant roles as props
- (f) Locations of presentations
- (g) Problems that have occurred in presenting the program
- (h) Perceived objectives of the program
- (i) Introduction content (wilderness act, land ethic, etc.)
- (j) Adaptations of the program for specific ecosystems, forests
- (k) Program evaluation methods
- (l) Suggestions for program improvement

### *Procedure and Subjects*

Attempts were made to contact individuals who had presented or were very familiar with the Impact Monster program. These people were identified in four ways: (a) from a list of contacts developed when the research project was being formulated; (b) from a list of participants at the Wilderness Education Working Group Session in Salt Lake City, UT, October, 1995; (c) as a response from a request for study participants on the Forest Service electronic mail system by the Assistant Director of the Arthur Carhart National Wilderness Training Center; and (d) by asking survey respondents to provide the names and addresses of other individuals they knew who had presented the program.

Beginning in June, 1996 subjects were mailed a cover letter and a survey with a self-addressed, stamped, return envelope. One week after an initial mailing, a reminder postcard was sent to all respondents. A second questionnaire was sent to non-respondents three weeks after the postcard. Due to the process of asking for additional subjects by a response to an item on the questionnaire, data collection continued through October, 1996. Fifty-five of 83 subjects (66.26%) responded to the questionnaire. Respondents to the survey were primarily Forest Service employees (n=48). The remaining seven respondents were employed by the Bureau of Land Management (n=2), the private sector (n=2), the National Park Service (n=1), an interagency funded position (n=1), and a National Forest Association (n=1).

## Results

### *Quasi-Experimental Design Study*

There were 302 boys (52.6%) and 270 girls (47.0%) who participated in the study. Two students did not provide their gender. Roles in the skit (frog, tree, rocks, flower, sign, and snake) were played by 192 students (33.4%). Each role was played by a randomly selected student. Three students performed the role of rocks in each class. Table 1 presents the number of students per grade level exposed to each of the eight treatments.

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Insert Table 1 about here

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An analysis was conducted for the full repeated measures model and for each of the potential appropriate and inappropriate behavioral intentions. Pretest and posttest factor mean scores are displayed in Table 2. Significant differences between pretest and posttest scores were present for levels of all factors. Between subjects main effects were also significant for all four factors. The full model shows

that there was a statistically significant difference between the pretest and posttest scores. Interaction effects were present for Wilderness User by pretest/posttest and Grade by pretest/posttest scores (Table 3). Higher order interactions were not of interest for this analysis.

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Insert Table 2 about here

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Insert Table 3 about here

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In addition to the full model analysis, chi square tests were conducted for each of the 17 behaviors which were coded as dichotomous variables (selected and not selected) (Table 4). A McNemar test for paired dichotomous variables was undertaken to conduct the analysis. The chi-square was significant and in the expected direction for all behaviors except hiking on a trail and using a tent away from a lake. Hiking on a trail changed in the expected direction, but using a tent away from a lake did not.

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Insert Table 4 about here

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### *Survey Research Study*

Descriptive Program Information. Respondents were asked a few questions regarding their overall experience with the Impact Monster program. Most respondents had presented the program 1-10 times (n=15), 11-20 times (n=14), or more than 40 times (n=13). Seven respondents had presented the program 21-30 times, five had only observed it, and one had presented it 31-40 times. Eleven respondents do not currently use the program, 14 use it rarely, 19 use it sometimes, and 11 use it often.

The Impact Monster program has been presented in a variety of settings and of various lengths. Among the most common presentation locations are schools, Forest Service training sessions, campfire programs, Wilderness Box teacher training workshops, and to cub scouts and boy scouts (see Table 5). The suggested length of the Impact Monster program by most respondents was "16-30 minutes" (n=29). Others felt it was best presented "under 15 minutes" (n=10), "31-45 minutes" (n=8), and "46-60 minutes" (n=7).

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Insert Table 5 about here

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Commonly, children play roles of various props during the Impact Monster program. Forty eight (94.1%) of the respondents use students during the skit; whereas three do not (5.9%). Respondents were asked to indicate the roles that children play during the skit (Table 6). The most frequent roles were tree, rock, snake, sign, frog, hawk, fish, and squirrel.

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Insert Table 6 about here

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Two primary skits have evolved during the 1980s and 1990s: the good guy/bad guy skit and the dream sequence skit. The good guy/bad guy skit is the predominant version utilized by the respondents (Table 7). However, adaptations and revisions in the program apparently have taken place as the program has evolved. Thirty-one (58.5%) of the respondents have adapted the program for a specific ecosystem, forest, or area. Respondents were asked to describe the changes that had been made. Most of these adaptations have been related to overall ecosystems or specific site characteristics including the use of stock, archeological resources, sensitive soils, proper food storage and camping in bear country, local flora and fauna, and water scarcity. Thirty-three comments were related to specific

site characteristics and 20 represented regional ecosystems. Three examples of responses are provided below.

- "Adapted to Southwest deserts - changed characters to represent local animals (kit fox, gila monster, fringe toed lizards, saguaro cactus, etc.)."
- "I have based the Impact Monster story around the local area using common trail names, lakes, and wildlife specific to wilderness."
- "Are in the process of designing it for over 30 different ecosystems."

Other changes to the program have taken place in order to fit the needs of cultural, social, and environmental factors in the vicinity of a specific forest or natural resources area. In addition to the adaptations described above, respondents indicated other changes that they were familiar with or had implemented. These changes were classified into four categories: (a) prop changes and improvements (n=6); (b) role changes (n=7); (c) skit content changes (n=22); and (d) program facilitation (n=6). Examples of each category are presented below.

- (a) "Using a sawhorse in areas with lots of stock use."
- (a) "I remove the gun being used with all children through age 21. I have the camper use a wrist rocket or rock."
- (b) "We often use students as Junior Rangers and have them point out improper practices and have them show Impact Monster proper practices."
- (b) "I have observed a skit where the 'bad guy' was anthropomorphized from a dinosaur - seemed to eliminate any stereotyping of humans."
- (c) "No glorifying the bad guy or making him fun."
- (c) "I model only good, positive behaviors and give or solicit rationale for each behavior or action."
- (d) "With older children we presented the skit, broke them into groups and assigned them an issue, i.e. campfires, etc. and had them put together a better way to complete the LNT goal which they then presented to the entire group."

- (d) "Use flip charts to foster audience involvement at the beginning of the program."

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Insert Table 7 about here

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Respondents were also asked to describe the content of their program introduction prior to beginning the Impact Monster skit (Table 8). The most frequent introduction contents included a wilderness definition, wilderness values or land ethic, the Wilderness Act, and Leave No Trace or low impact principles. It should be noted that a few respondents indicated that their introduction varies based on participant knowledge, age, time allotted, and audience size.

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Insert Table 8 about here

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Effectiveness. In addition to the descriptive information described above, the respondents evaluated the effectiveness of specific program elements and appropriate groups to receive the program. The program was rated as an excellent tool for teaching wilderness education by 9 respondents (16.4%), 22 (40.0%) considered it very good, 13 (23.6%) rated it good, 8 (14.5%) rated it fair, and 3 (5.5%) thought the program was poor.

Of the program elements that were evaluated (Table 9), an Impact Monster in bright colored clothing had the highest mean score (4.20). Other elements rated highly were a wilderness user as the good guy (4.13), a uniformed ranger as the good guy (4.10), an audience peer as the good guy (4.07), and a wilderness couple as the good guys (4.00). The use of music and more creative forms of the Impact Monster were among the lowest scores. The program was considered most effective for fourth (4.22), fifth (4.16), third (4.00), and sixth grades (3.98) (Table 10).

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Insert Table 9 about here

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Insert Table 10 about here

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Problems. Specific problems (assuming that the Impact Monster was dressed in brightly dressed clothing) rated on a 5-point Likert type scale (Table 11) and a description of other problems encountered when presenting the program were also attained in the survey. The problems with the highest mean scores were children afraid of a gun when it is used in the skit (2.94), wilderness educators are "burned out" on the program (2.92), children in high school identify with the Impact Monster (2.91), and children in grades 6-8 identify with the Impact Monster (2.85).

Respondents did not think that children seeing a uniformed ranger as an authority figure, adults identifying with the Impact Monster, or children fearing a uniformed ranger were problems. Although 51 individual comments were provided, there was little consensus regarding problems identified that were not previously rated in the closed-ended items. The few problems mentioned by multiple subjects were (a) oriented towards children's behavior (n=9); (b) acquisition or funding of quality props (n=5); (c) the message of the skit being lost in the process (n=5); and (d) having an appropriate setting for the skit (n=3). Examples of each of these problem themes are provided below:

- (a) "Some teachers 'hand over' the class to the presenters, which often times causes unruly behavior to surface."
- (b) "Poor props due to a lack of funding."
- (c) "Sometimes the actors are well-versed in wilderness and tend to think of the skit as entertainment, at which point the message can get lost."

- (d) "I think we have a few more problems in a non-classroom setting as opposed to a classroom setting."

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Insert Table 11 about here

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Evaluation. Respondents were asked the evaluation methods that they employ to assess the effectiveness of the program (Table 12). Informal methods were the most frequently used evaluation methods. However, 20 (37%) of the respondents had utilized questionnaires that were completed by teachers.

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Insert Table 12 about here

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Behavioral Objectives. Although the Impact Monster program has been adapted broadly to Leave No Trace principles in the K-8 Wilderness and Land Ethic Curriculum, apparently specific behavioral objectives have not been developed for the skit. Therefore, one item on the survey asked respondents to recommend specific, measurable, behavioral objectives that could be accomplished through the program. Although few of the responses were in a measurable objective format, 70 comments were analyzed. Sixty-four were classified into four categories: (a) Leave No Trace principles and skills (n=41); (b) general behavior and land ethic (n=13); (c) impact recognition (n=6); and (d) wilderness knowledge (n=4). Examples of these categories are:

- (a) "Students will be able to name Leave No Trace principles/techniques."
- (a) "I think the best to hope for is that on a post quiz participants demonstrate an understanding of the key LNT practices."
- (b) "Participants develop a personal land ethic."
- (b) "Children learn basic behavior patterns both positive and negative. Makes lasting impressions."

- (c) "By the end of the program children will be capable of identifying ways people can impact natural environments."
- (c) "An awareness of the cause and effects from wilderness users on the resource and other users."
- (d) "Can set a framework of understanding wilderness concepts."
- (d) "Learn about Wilderness Act."

Suggestions and Comments. The final two open-ended questions of the survey asked the respondents for suggestions to improve the program and anything else that they would like to share about their experiences with the program. There were 88 improvement suggestions generated from these two items. Many of these comments were single responses. Those multiple responses with the highest frequencies were avoiding stereotypes and recognizing cultural differences (n=9); props preparation and sources (n=8); emphasizing positive behavior rather than negative behavior (n=7); maintaining a flexible and adaptable program (n=7); and the need for evaluation methods (n=7) (Table 13).

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Insert Table 13 about here

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A primary theme that developed from the final item related to support or a lack of support for the Impact Monster program. Three individuals do not use the program and do not think that it is an effective wilderness education tool. One comment went as far as saying that it was discouraging to see the Leopold Institute funding research regarding the Impact Monster program and that it should be abolished. Seventeen respondents commented on positive experiences with the program. These included that it was an effective educational tool, a rewarding experience, and a fun program related to minimum impact.

A number of single response comments generated from the final three open-ended items are worth reporting in the results due to the foresightedness of these respondents. A listing of these comments is provided.

- "We are not dealing with a 'bad guy' we are dealing with the uninformed."
- "We have had reports that children pass learned information on to their parents."
- "Key is how Impact Monster relates to audience. Will determine overall effectiveness."
- "Share ideas of scripts with those who have been using and doing Impact Monster."
- "Need to be very careful that the presenter does not portray legal uses of wilderness as 'bad,' such as hunting."
- "This skit has helped us develop a good partnership with local schools. We have expanded environmental education to skills trail and wilderness box partly because of success of this skit."
- "The kids have a great time with it - just can't tell if it is making a difference."

### Conclusions and Discussion

The results of the quasi-experimental design study and the survey research overall assessment of wilderness educators support the effectiveness of the Impact Monster program. Although it is not without its critics, it continues to be a widely used wilderness education tool to teach appropriate wilderness behavior and is considered a good to excellent program by most individuals who use or are familiar with it. Conclusions to the nine research questions are presented below. The first four items are conclusions to the quasi-experimental design study. The final five

items relate to content improvements of the program and were generated from the survey research study.

1. Overall, the hiker is a greater influence than the ranger as a source of a "positive message," and its influence on behavioral intentions. In analyzing mean scores this is especially apparent for sixth grade students and to a lesser extent third grade students. The source does not make a difference for first grade students.

2. Although there is a significant between subjects effect for the Impact Monster as an overall source of the "negative message" there is not a significant difference when considering pretest and posttest scores. Thus, the source of the "negative message" makes little difference in influencing behavioral intentions. Mean scores vary by grade level. First grade students are influenced more by the cool monster, whereas third and sixth grade students are influenced more by the normal monster.

3. For the entire sample, the between subjects effect for the message argument (asking v. telling) was significant; however, the within subjects effect was not ( $p < .054$ ). Although not quite statistically significant, mean scores for all three grade levels are higher with the telling message than with the asking message.

4. There is a significant difference between grade level pretest and posttest scores. Third and sixth grade levels influence behavioral intentions more than first grade.

5. Eighty percent of the wilderness educators rated the Impact Monster good to excellent as an effective wilderness education tool.

6. Wilderness educators consider a bright colored clothing Impact Monster to be an effective element of the program. Other effective elements are various versions of the good guy.

7. Wilderness educators consider fourth, fifth, third, and sixth grades respectively the most appropriate recipients of the Impact Monster program.

8. The most extensive problems wilderness educators rated are children being afraid of a gun, wilderness educators being "burned out" on the program, and high school and sixth to eight grade students identifying with the Impact Monster. Behavioral control, quality of props, and maintaining the message intent of the skit are other problems that were identified. The most frequent suggestions for improvements in the program were avoiding stereotypes and being sensitive to cultural differences, preparing and acquiring props, emphasizing positive behavior, maintaining program flexibility, and developing evaluation methods.

9. Behavioral objectives should focus on Leave No Trace principles, inculcating a land ethic that promotes appropriate behavior, recognizing impacts, and wilderness knowledge.

### *Educational Implications*

Grade Level. First and foremost, it should be recognized that regardless of the factor levels within the quasi-experimental study, the Impact Monster, in all cases made a difference in pretest and posttest scores. Thus, at least for short-term behavioral intentions, the skits that wilderness educators are using are probably having an influence on participants regardless of the version as long as quality actors are involved and the purpose of the skit is maintained.

As evidenced by the experimental study and the variety of locations and groups who have been recipients of the program, some attention is necessary in assessing suitable audiences for the skit. Both studies indicate that grades ranging from third to sixth are the most appropriate audiences for the skit. There are significant differences between first grader pre and posttest scores; however, following the skit less than two appropriate behaviors were identified by this group

as behavioral intentions. Thus, the effectiveness of the skit for this grade level seems questionable.

Other groups and grade levels need further examination. Mixed adult/children groups and mixed elementary grades seem to be rather effective based on the results of the survey. Further research should be conducted to examine the effects of mixed audiences on behavioral intentions of program participants. Also, there seems to be interest by wilderness educators to continue to utilize the program for various audiences and age levels. If this approach is to continue, then, as one respondent suggests, versions of the skit could be created for different grade levels. The skit versions need to consider the learning development stages of targeted groups. Another respondent has interest in how to adapt the program to adults and high school students. A comparison of a Leave No Trace program and the Impact Monster skit could be undertaken to ascertain the effectiveness of each program. The general interest and the wide variety of versions being utilized suggests that standardization and formats for varying levels should be developed.

Message Sources. The experimental research and survey present contrasting results regarding the source of the positive message. For the former, the good guy is more effective as a wilderness hiker than as a wilderness ranger. As grade level increases the effectiveness of the wilderness ranger decreases. In the survey results, there is little difference in the mean scores of these two sources and both are rated relatively high. When presenting the program to upper elementary grades, consideration should be given to utilizing a wilderness hiker rather than a ranger.

The source of the negative message also results in discrepancies between the two studies. The experimental study results suggest that it makes little difference who presents the message; the cool impact monster dressed in bright colors, or an

Impact Monster dressed in neutral colors who looks similar to a traditional wilderness user. However, as noted above, third and sixth grade students' behavioral intention scores are greater with the traditional wilderness user Impact Monster. The wilderness educators' rating of the bright colored Impact Monster is far greater than that of a wilderness user Impact Monster. More creative roles of the Impact Monster received lesser ratings by the wilderness educators. This seems to be primarily due to respondents' concerns regarding stereotypes and cultural differences of users. Keeping this in mind, it is plausible that the bright colored monster may also encourage stereotyping. Furthermore, the skit may retain its effectiveness while using an "uninformed" or "ignorant" user as opposed to a "monster."

Other message sources need further investigation. Peers of the audience in the roles of the good guy and the bad guy, and junior ranger roles are potential effective sources of messages. In addition, due to the first grade students' response to the cool Impact Monster, symbolic figures such as Woodsy the Owl may be potential sources of messages.

Message Arguments. There is not a significant difference between the telling and asking versions of the skit; however, with the relatively low p value and the practical results that behavioral intentions are greater for all grade levels with a telling message, attention should be given to the format of the skit. Apparently, even at the sixth grade level, the students are more responsive to a message argument that is a telling format. When writing scripts for a skit, wilderness educators should take into consideration the audience's ability to process information. For the experimental study extensive use of pre-written questions was employed in order to systematically differentiate the telling v. asking skit. The abundance of questions may have been beyond the processing capabilities of even the sixth grade students. Further research needs to be pursued regarding this

variable before definitive solutions may be offered. Nevertheless, it should be recognized that a skilled facilitator (narrator or actor) is needed to employ an asking format effectively.

Program Content. The chi-square analysis of individual behavioral intentions (Table 4) demonstrates that there is a significant difference in pretest and posttest scores for all behaviors except hiking on a trail and setting up a tent away from a lake (a percentage decrease for the posttest score). These two behaviors have similar characteristics. Most respondents chose the behaviors during the pretest and they were not explicitly demonstrated during the skit. The wilderness hiker/ranger states the need to stay on trails and not to create additional impacts by hiking off trail. However, the behavior is not demonstrated. This actor also stresses that if she had a tent she would set it up far away from the lake (200 feet). Apparently, behaviors that are not acted out, are not as easily adopted or likely to become intentions for individuals who do not already have this intention. Interestingly, tying a horse to a tree next to a lake is not addressed in the skit, but decreased significantly from 39.5% to 26.5%. However, the percentage is the highest of unacceptable behaviors and therefore still supports the need to explicitly address desired behaviors.

Currently, an ecosystem management emphasis is influencing the strategies and objectives of the Forest Service as a land management agency. As one respondent states, efforts are already underway to adapt the Impact Monster program to 30 different ecosystems. Program content should reflect this change and this information needs to be disseminated to wilderness educators who use the Impact Monster program. At a minimum, the program introduction should include an ecosystem management component. It is also important to maintain program flexibility to meet the needs of individual site characteristics.

Program content should be linked more directly to Leave No Trace principles. Although low impact skills and differentiating between appropriate and inappropriate impacts are currently components of many skit versions, it is evident that some wilderness educators are actually using Leave No Trace and others are not. A unified, national effort could be accomplished by incorporating Leave No Trace principles directly into the Impact Monster skit.

It also seems that violence and the use of guns can be effectively removed from the program and this change in the skit would receive support from many wilderness educators. Plans to incorporate more students directly in the skit would also be useful. This may be done with additional role playing assignments and by students playing key actor roles.

#### Establishing Behavioral Objectives.

A common element of program planning and educational lesson plans is the development of behavioral or learning objectives. As previously discussed, respondents mention four categories of behavioral objectives. These comments relate to Leave No Trace, general behavior and a land ethic, recognizing impacts, and wilderness knowledge. Measurable objectives need to be developed for each of these areas. For example, participants in the Impact Monster program may be asked to recall the six Leave No Trace principles, be able to write a personal land ethic, identify three permanent and three non-permanent impacts, and recall two different wilderness definitions.

Evaluation Needs. Most wilderness educators tend to conduct informal evaluations of the Impact Monster program. Suggestions for improvement include the recommendation that evaluation methods be provided. A logical start would be the development of a universal reliable and valid instrument that can be utilized in surveying teachers. A second evaluation need relates directly to program participants. For the experimental design study, permission was granted from an

artist, with a fee paid for usage, to adapt her artwork to our research needs. This same artwork, or a similar piece would serve as a usable instrument for students. A revision would need to include an illustration of each of the six Leave No Trace principles. One respondent actually has students demonstrate what they have learned in a mock camping setting. Props for such a setting could easily be standardized and adapted to the program behavioral objectives.

### *Program Management Implications*

In addition to evaluation needs, a few issues arose from the survey that address program management. It is evident that wilderness educators need training and techniques for managing behavior problems when presenting the Impact Monster skit or when leading other wilderness education programs. Classroom management guidelines and suggestions for handling disruptive behavior are necessary for a variety of settings and age groups.

Although many respondents are aware of the need to recognize cultural differences, it was not ascertained in the survey if wilderness educators are trained to recognize and be sensitive to these differences. Additional training in this area may also be necessary.

A final program management issue involves the acquisition, maintenance, and funding of props. Survey respondents mention this issue as both a problem with the program and as a suggestion for improvement. It is possible that some wilderness educators are not aware of the Wilderness Education Association's availability as a source of props, or they are not satisfied with these props. This should be examined further. Suggestions for maintenance of the props could be incorporated with other materials to assist in program management and evaluation. Funding will need commitment on a national scale as one respondent points out.

### *Theoretical Implications*

The experimental design research study is theoretically based on the Elaboration Likelihood Model of persuasive communication (Petty & Cacioppo, 1981, 1986). In this study, to assess the effectiveness of peripheral and conceptual routes to persuasion (Petty & Cacioppo, 1981, 1986) as factors effecting behavioral intentions, two peripheral routes (the two message sources) and one central route (telling v. asking skit) are examined. As mentioned previously, although not quite statistically significant, greater mean score differences occur with the telling format of the skit for all three grade levels. This indicates that the message (telling) requiring less cognitive development and information processing is potentially the more influential. Thus, with the combination of source peripheral cues and the influence of a message oriented peripheral cue, the peripheral route to persuasion is the likely route for most subjects. These results support Roggenbuck and Manfredo's (1989) suggestion that wilderness education programs for children should probably not employ information processing techniques. The students may have the necessary motivation for central route processing, but may not have the requisite information processing capabilities. This is particularly evident for third grade students who are much more likely to be influenced by a telling format. The research assistants involved with the program repeatedly commented on the positive behavior and desire to learn displayed by the third grade students. With the knowledge attained from this study, the message emphasis should probably focus on peripheral routes to persuasion within the Impact Monster skit. However, it must be realized that these techniques may be successful in changing short-term behavior, but will probably not effect attitudes and thus behavior in the long-term.

Credibility and source attractiveness are key components of peripheral cue source factors (Petty & Cacioppo, 1981, 1986; Petty, McMichael, & Brannon, 1992). If central route processing is not taking place, the importance of actors in the

Impact Monster skit becomes magnified. For example, the significant difference between the wilderness ranger and wilderness hiker good guy source is of primary interest in this research. Did the students consider the hiker to be a more credible source? Expertise is another source variable that comes into play here. In this case, is attractiveness more important than expertise as a peripheral cue or was the ranger considered less of an expert? Perloff (1993) discussed similarity as an alternative source to attractiveness, expertise, and credibility. Therefore, who should fulfill the good guy and bad guy roles in efforts to effectively utilize the peripheral route? Attractive, credible, expert, and similar sources may have differing influences on behavioral intentions of participants in the Impact Monster program.

In relating Piaget's cognitive development stages to the Elaboration Likelihood Model, in this study, it appears that the Impact Monster program is well suited for a "Concrete-Operations Period" where problem solving and drawing conclusions occur (Thomas, 1996). Although it is not necessary for children to have direct exposure to objects in this period, at its earlier stages direct observation may assist in learning (Thomas, 1996). This may help explain why the hiking on a trail, and the tent away from the lake behavioral intentions did not increase significantly from the pretest to posttest. Direct observation<sup>of the hiking and tent</sup> did not occur in the skit. Further examination of the relationship between the Elaboration Likelihood Model and cognitive development stages may be useful in developing skit versions that appropriately link information processing capabilities to cognitive development stages of children.

### *Further Research*

In summary, additional research is necessary to further assess the success of the Impact Monster program at influencing behavioral intentions and to make

recommendations on standardized versions of the skit. These efforts should compliment communication research of other wilderness education techniques which is an area currently lacking rigorous research (Cole, 1989). Among the additional variables that are worthy of investigation are additional sources of the messages, appropriate recipients of the program (in particular, mixed children age groups and adult/children age groups), and various message content variables. The analysis for the present study did not address other potentially important persuasive communication content variables such as (a) personal involvement with the message (Petty & Cacioppo, 1979) (role players v. audience); (b) the order that the message is presented (modeling inappropriate impacts prior to appropriate impacts or vice versa) (Gilkinson, Paulson, & Sikkink, 1954; Gulley & Berlo, 1956); (c) message repetition or the total amount of information presented (Petty, McMichael, & Brannon, 1992) (number of Leave No Trace principles that can be presented and how many times the principles should be repeated); or (d) prior knowledge (Petty, McMichael, & Brannon, 1992) (prior camping experience). A final area of necessary research should investigate the effects of message recipient attitudes toward a source on behavioral intentions (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) (attitude and identification toward a source such as the bad guy).

In conclusion, refinements based on sound theory can potentially improve the effectiveness of the Impact Monster program. Nevertheless, it is worth repeating that the results of this research and Tracy's (1995) study provide evidence that current versions of the Impact Monster program influence short-term behavioral intentions and the program should remain a tool for wilderness educators in efforts to promote appropriate wilderness behavior.

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Table 1

Treatment by Grade Level

Treatment	Grade			Total	Percent
	First	Third	Sixth		
Impact Monster Cool/Wilderness Hiker/Telling	25	26	26	77	13.4
Impact Monster Cool/Wilderness Ranger/Telling	19	19	23	61	10.6
Impact Monster Normal/Wilderness Hiker/Telling	26	26	21	73	12.7
Impact Monster Normal/Wilderness Ranger/Telling	26	23	18	67	11.7
Impact Monster Cool/Wilderness Hiker/Asking	27	27	22	76	13.2
Impact Monster Cool/Wilderness Ranger/Asking	27	26	19	72	12.5
Impact Monster Normal/Wilderness Hiker/Asking	23	28	19	70	12.2
Impact Monster Normal/Wilderness Ranger/Asking	26	23	18	67	11.7
Totals	200	202	172	574	100.0

Table 2  
Factor Mean Scores

Factor	Pretest	SD	Posttest	SD	Mean Difference
Wilderness User					
Hiker	- 0.30	2.51	3.21	2.43	3.51*
First Grade	- 0.62	2.40	1.87	2.30	2.49*
Third Grade	0.33	2.71	3.64	2.00	3.31*
Sixth Grade	- 0.69	2.22	4.24	1.81	4.93*
Ranger	0.65	2.74	3.35	2.66	2.69*
First Grade	- 0.50	2.25	1.99	2.70	2.49*
Third Grade	1.08	2.58	4.14	2.13	3.05*
Sixth Grade	1.52	3.00	4.05	2.54	2.52*
Impact Monster					
Cool	0.17	2.68	3.35	2.58	3.18*
First Grade	- 0.70	2.35	2.02	2.68	2.72*
Third Grade	0.82	2.59	3.99	2.20	3.17*
Sixth Grade	0.22	2.89	3.91	2.43	3.69*
Normal	0.15	2.65	3.19	2.50	3.04*
First Grade	- 0.43	2.29	1.84	2.75	2.27*
Third Grade	0.45	2.80	3.67	1.85	3.22*
Sixth Grade	0.57	2.82	4.40	1.88	3.83*
Message					
Telling	- 0.18	2.74	3.21	2.75	3.39*
First Grade	- 1.24	2.22	1.34	2.88	2.58*
Third Grade	0.30	2.85	4.07	2.27	3.77*
Sixth Grade	0.45	2.83	4.33	1.86	3.88*
Asking	0.48	2.55	3.33	2.34	2.85*
First Grade	0.06	2.42	2.47	2.42	2.41*
Third Grade	1.02	2.47	3.69	1.87	2.67*
Sixth Grade	0.32	2.89	3.95	2.49	3.63*
Grade					
First	- 0.56	2.32	1.93	2.71	2.49*
Third	0.68	2.67	3.87	2.07	3.19*
Sixth	0.39	2.85	4.15	2.19	3.76*
Total Sample	0.16	2.66	3.28	2.54	3.12*

Note: Paired sample t-tests for each pair of pretest and posttest factors \*p < .001.

Table 3  
Analysis of Variance for Factors and Pretest/Posttest

Source	df	SS	MS	F
Between Subjects Effects				
Wilderness Hiker/Ranger	1	100.12	100.12	14.31**
Impact Monster Cool/Normal	1	31.75	31.75	4.54*
Asking/Telling Message	1	60.28	60.28	8.62**
Grade	2	637.40	318.70	45.56**
Between Group Error	551	3854.23	6.99	
Within Subjects Effects				
Pre/Post Test	1	1961.13	1961.13	507.02**
Hiker/Ranger x Pre/Post Test	1	55.42	55.42	14.33**
Impact Monster x Pre/Post Test	1	.89	.89	.23
Message x Pre/Post Test	1	14.39	14.39	3.72
Grade x Pre/Post Test	2	82.58	41.29	10.67**
Within Group Error	551	2131.43	3.87	

Note. \* $p < .05$ . \*\* $p < .001$ . Using simple deviation contrasts for grade level significant differences were present between first and third grade ( $p < .019$ ), and between first and sixth grade ( $p < .001$ ).

Table 4  
Wilderness Camping Behavior Selection

Behavior	Pretest Selection	Posttest Selection
	Percent	
Inappropriate Behavior		
Banana Peel on Rock	9.8	4.0*
Carve Initials in Tree	23.9	7.3*
Cut Limb on Tree	29.8	7.3*
Wash Dishes in Lake	48.1	13.2*
Build a Fire	69.5	17.1*
Horse Tied Next to Lake	39.5	26.5*
Flowers in Jar	30.8	7.9*
Nail in Tree	25.6	6.1*
Hike off Trail	35.2	14.6*
Pick Flower	24.9	5.7*
Listen to Radio	42.5	17.4*
Appropriate Behavior		
Wash Dishes Away from Lake	56.8	73.9*
Hike on Trail	75.8	79.6
Use of Trail Sign	48.6	58.9*
Smell Flower	58.0	76.7*
Use a Stove	59.9	79.1*
Tent Away from Lake	87.1	83.3

Note: A McNemar test for related dichotomous variables was used to conduct a chi-square analysis. \* $p < .0001$ .

Table 5

Impact Monster Program Presentation Locations

Location	Frequency	Percent	Rank
Schools	43	78.18	1
Forest Service Training Session	34	61.81	2
Campfire Programs	25	45.45	3
Wilderness Box Teacher Training Workshops	19	34.54	4
Cub Scouts/Boy Scouts	19	34.54	4
Girl Scouts/Campfire Girls	14	25.45	6
Church	12	21.81	7
Residential Environmental Education Camps	16	20.09	8
Leave No Trace Training Courses	11	20.00	9
Local Fairs	10	18.18	10
Mall/Shopping Centers	5	9.09	11
YMCAs/YWCAs	4	7.27	12
State Park Amphitheatre	2	3.63	13
Wilderness Day Event	2	3.63	13
National Park Service Trails Day Event	2	3.63	13
Elks Club Father/Son Event	1	1.81	16
High Use Recreation Area	1	1.81	16
Library Childrens Program	1	1.81	16
Regional Family Meeting	1	1.81	16
Interagency Sessions	1	1.81	16
International Sessions	1	1.81	16
Workshops	1	1.81	16
Rocky Mt Elk Foundation	1	1.81	16
Yauapai/Apache Summer Youth Program	1	1.81	16

Note: Subjects checked all that applied.

Table 6

Children's Roles in Skit

Role	Frequency	Percent	Rank
Tree	45	81.8	1
Rock	38	69.1	2
Snake	35	63.6	3
Sign	35	63.6	3
Frog	32	58.2	5
Hawk	30	54.5	6
Fish	27	49.1	7
Squirrel	25	45.5	8
Eagle	19	34.5	9
River	17	30.9	10
Flowers	17	30.9	10
Snag	16	29.1	12
Impact Monster Catchers	12	21.8	13
Elk	8	14.5	14
Horse	4	7.3	15
Lake	3	5.5	16
Pictograph	3	5.5	16
Archeological Site	3	5.5	16
Coyote	3	5.5	16
Deer	2	3.6	20
Endangered Plant	2	3.6	20
Wolf	2	3.6	20
Tent	2	3.6	20
Junior Ranger	2	3.6	20
Cactus	2	3.6	20
Rat	2	3.6	20
Birds	2	3.6	20
Butterfly	2	3.6	20
Single Responses	12	21.8	

Note: Subjects checked all that applied.

Table 7

Impact Monster Skit Versions

Version	Frequency	Percent	Rank
Good Guy/Bad Guy	50	92.6	1
Bad Guy	6	11.1	2
Dream Sequence	4	7.4	3
Wilderness Ranger	2	3.7	4
Combination Good/Bad Guy/Dream Sequence	2	3.7	4
Dude	1	1.8	6
Junior Ranger and Prompt Audience	1	1.8	6
Compare Impacts	1	1.8	6
Developed Own Skit	1	1.8	6
Ignorant Hiker Becomes Enlightened by Leave No Trace User	1	1.8	6

Note. n = 54.

Table 8  
Program Introduction

Content	Frequency	Percent	Rank
Wilderness Definition	31	58.5	1
Wilderness Values/Land Ethic	28	52.8	2
Wilderness Act	15	28.8	3
Leave No Trace/Impacts	14	26.9	4
Introduce Selves	12	23.1	5
Leave No Trace Principles	11	21.1	6
Protected Areas	6	11.3	7
Proper Behavior	5	9.4	8
Ecosystems	4	7.5	9
Wilderness Box Lessons	3	5.7	10
Wilderness History	3	5.7	10
Keep Wilderness Wild	2	3.8	12
Maps	2	3.8	12
Relate to Personal Experience	2	3.8	12
Web of Life	2	3.8	12
Recreational Uses	2	3.8	12
Differences in Agencies	2	3.8	12
Role Play Training/Assignments	2	3.8	12
Single Responses	13	26.4	

Note: n = 53.

Table 9

Element Effectiveness as an Aspect of Impact Monster Program

Program Element	Mean	SD	N	Don't Know
Bright Colored Clothing Impact Monster	4.20	0.89	51	1
Wilderness User Good Guy	4.13	0.70	48	2
Uniformed Ranger Good Guy	4.10	0.98	49	0
Audience Peer Good Guy	4.07	0.86	43	6
Wilderness User Couple Good Guys	4.00	0.70	42	7
Incentives to Encourage Low Impact Behavior	3.95	0.90	40	9
Wilderness User Impact Monster	3.49	1.16	43	6
Trash Covered Impact Monster	3.29	1.15	42	8
Rap Music Played by Impact Monster	3.11	1.54	42	5
Country Music Played by Impact Monster	2.46	1.29	39	9
Old Backcountry Horseman Impact Monster	2.07	1.19	41	8
Country Western Geek Impact Monster	2.05	1.18	40	9
Classical Music Played by Impact Monster	2.00	1.04	38	10
White Faced Mask Impact Monster	1.95	1.05	39	10

Note: 5-point scale, 1 (not effective) to 5 (very effective). A don't know category was included for each item.

Table 10

Impact Monster Program Group Effectiveness

Group	Mean	SD	N	Don't Know
Fourth Grade	4.22	0.68	50	3
Fifth Grade	4.16	0.85	49	4
Third Grade	4.00	0.90	50	3
Sixth Grade	3.98	1.02	48	5
Mixed Adults/Children	3.82	1.12	50	3
Mixed Elementary Grades	3.78	0.89	46	6
Second Grade	3.63	1.16	48	5
Seventh Grade	3.20	1.15	46	7
First Grade	3.17	1.22	47	5
Adults	3.16	1.22	50	3
Kindergarten	2.89	1.30	44	8
Eighth Grade	2.72	1.19	46	7
High School	2.69	1.24	48	5

Note: 5-point scale, 1 (not effective) to 5 (very effective). A don't know category was included for each item.

Table 11

Extent of Problems

Problems	Mean	SD	N	Don't Know
Children Afraid of Gun	2.94	1.58	36	14
Wilderness Educators "Burned Out"	2.92	1.26	49	4
High School Identify with Monster	2.91	1.41	44	8
Grades 6-8 Identify with Monster	2.85	1.37	46	7
With Good/Bad Guy Behavior Child Control is a Problem	2.65	1.16	49	3
Grades K-2 Identify with Monster	2.55	1.35	44	9
Grades 3-5 Identify with Monster	2.45	1.23	49	4
Stereotypes Users who Dress Like Monster	2.45	1.02	49	3
Difficult to Get all Involved	2.43	1.12	51	1
Message Conflicts with Parent's Career	2.41	1.13	51	2
Difficult to Maintain Child Attention for Entire Program	2.36	1.19	50	2
Program Encourages Cultural Barriers	2.18	1.21	44	8
Children Fear the Monster	2.07	1.08	46	7
Uniformed Ranger Seen as Negative Authority Figure	2.00	1.09	50	3
Adults Identify with Monster	1.98	0.94	50	2
Children Fear Uniformed Ranger	1.65	0.89	48	6

Note: 5-point scale 1 (not a problem) to 5 (serious problem). A don't know category was included for each item.

Table 12

Evaluation Methods Employed

Method	Frequency	Percent	Rank
Informal Feedback from Teachers	44	81.5	1
Informal Personal Evaluation	42	77.8	2
Informal Discussions with Wilderness Educators	39	72.2	3
Informal Feedback from Participants	36	65.5	4
Observation of Participants and Written Documentation of Observations	21	38.9	5
Questionnaire Completed by Teachers	20	37.0	6
Questionnaire Completed by Participants	6	11.1	7
Research Experiment of Effectiveness	3	5.6	8
Letters from Students	3	5.6	8
Requests for the Program	2	3.7	10
Interactive/Drawing Evaluations	2	3.7	10

Note: n = 54. Subjects checked all that applied.

Table 13

Improvement Suggestions

Suggestion	Frequency	Percent	Rank
Avoid Stereotypes/Recognize Cultural Differences	9	16.7	1
Preparation and Sources of Props	8	14.8	2
Emphasize Positive Behavior	7	13.0	3
Need Evaluation Methods	7	13.0	3
Need Flexible Program	7	13.0	3
Adapt to all Public Lands	4	7.4	6
Involve Full Audience	4	7.4	6
No Guns or Violence	4	7.4	6
Need Support and Funding	3	5.6	9
No Cool Bad Guy	3	5.6	9
Use Dream Sequence	3	5.6	9
Use a Discussion/Question Period Conclusion	3	3.7	9
Recommendations for Good Guy	2	3.7	13
Consequences of Inappropriate Camping	2	3.7	13
Incorporate Ecosystems	2	3.7	13
Incorporate Skills Trail	2	3.7	13
Single Responses	18	33.3	

Note: n = 54.

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